

Abstract Submitted
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Progress on the ARIADNE Axion Experiment¹ CHLOE LOHMEYER, NANCY AGGARWAL, Northwestern University, JORDAN DARGET, MELINDA HARKNESS, HARRY FOSBINDER-ELKINS, University of Nevada, Reno, ANDREW GERACI, Northwestern University, ARIADNE COLLABORATION — The Axion Resonant InterAction Detection Experiment (ARIADNE) will search for the QCD axion, a hypothetical particle that is a dark matter candidate. Using a new technique based on Nuclear Magnetic Resonance, this new method can probe well into the allowed QCD axion mass range^[1]. Sourcing the QCD axion locally in the lab allows for it to be independent of cosmological assumptions. The axion acts as a mediator of novel spin-dependent forces between a sample of laser-polarized ^3He gas and an unpolarized Tungsten source mass. Our project relies on the stability of the rotating segmented source mass and superconducting magnetic shielding. Progress on testing the stability of the rotary assembly will be reported. Magnetic characterization of the mass and shielding will be discussed, along with plans for moving the experiment forward. [1] A. Arvanitaki and A. Geraci, Phys. Rev. Lett. 113, 161801 (2014) [2] A. Geraci et al., arXiv.1710.05413. Submitted to Proceedings of the 2nd Axion Cavity and Detector Workshop (2017).

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